



EISA and Future Residential Lighting Programs

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Ecos

ENERGY STAR[®] Lighting Partner Meeting
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Overview

- ▶ What is EISA?
- ▶ What will it do?
- ▶ By when?
- ▶ If EISA “bans the bulb,” will my CFL programs become obsolete?
- ▶ How should utility programs continue to drive voluntary lighting energy savings?

EISA

- ▶ “Energy Independence and Security Act of 2007”
- ▶ Signed into law in December 2007
- ▶ U.S. federal law that covers a wide variety of energy savings measures, from algal biogas to zero net energy homes.
- ▶ Includes mandatory “energy efficiency standards for general service incandescent lamps”
 - ▷ Phases in Tier 1 requirements starting in 2012
 - ▷ Covers lumen range of 310 – 2600
 - ▷ Provides less stringent requirements for modified spectrum lamps
 - ▷ Includes provisions for a Tier 2 in 2020
 - ▷ Allows CA and NV to implement Tier 1 a year early and Tier 2 two years early
 - ▷ Requires review and update of current FTC lamp labeling

General Service Incandescent Lamp Standards

“GENERAL SERVICE INCANDESCENT LAMPS

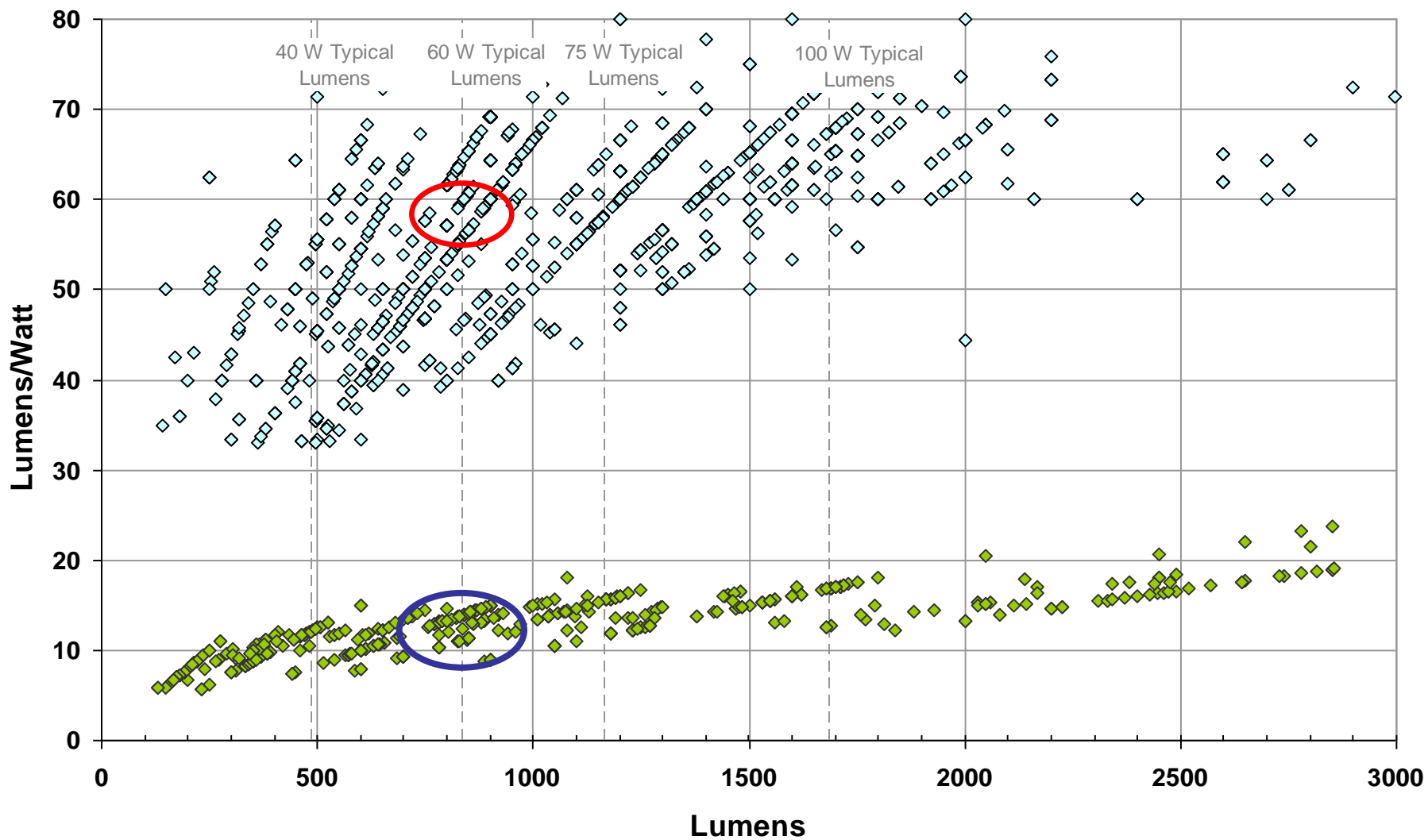
Rated Lumen Ranges	Maximum Rate Wattage	Minimum Rate Life-time	Effective Date
1490–2600	72	1,000 hrs	1/1/2012
1050–1489	53	1,000 hrs	1/1/2013
750–1049	43	1,000 hrs	1/1/2014
310–749	29	1,000 hrs	1/1/2014

“MODIFIED SPECTRUM GENERAL SERVICE INCANDESCENT LAMPS

Rated Lumen Ranges	Maximum Rate Wattage	Minimum Rate Life-time	Effective Date
1118–1950	72	1,000 hrs	1/1/2012
788–1117	53	1,000 hrs	1/1/2013
563–787	43	1,000 hrs	1/1/2014
232–562	29	1,000 hrs	1/1/2014”;

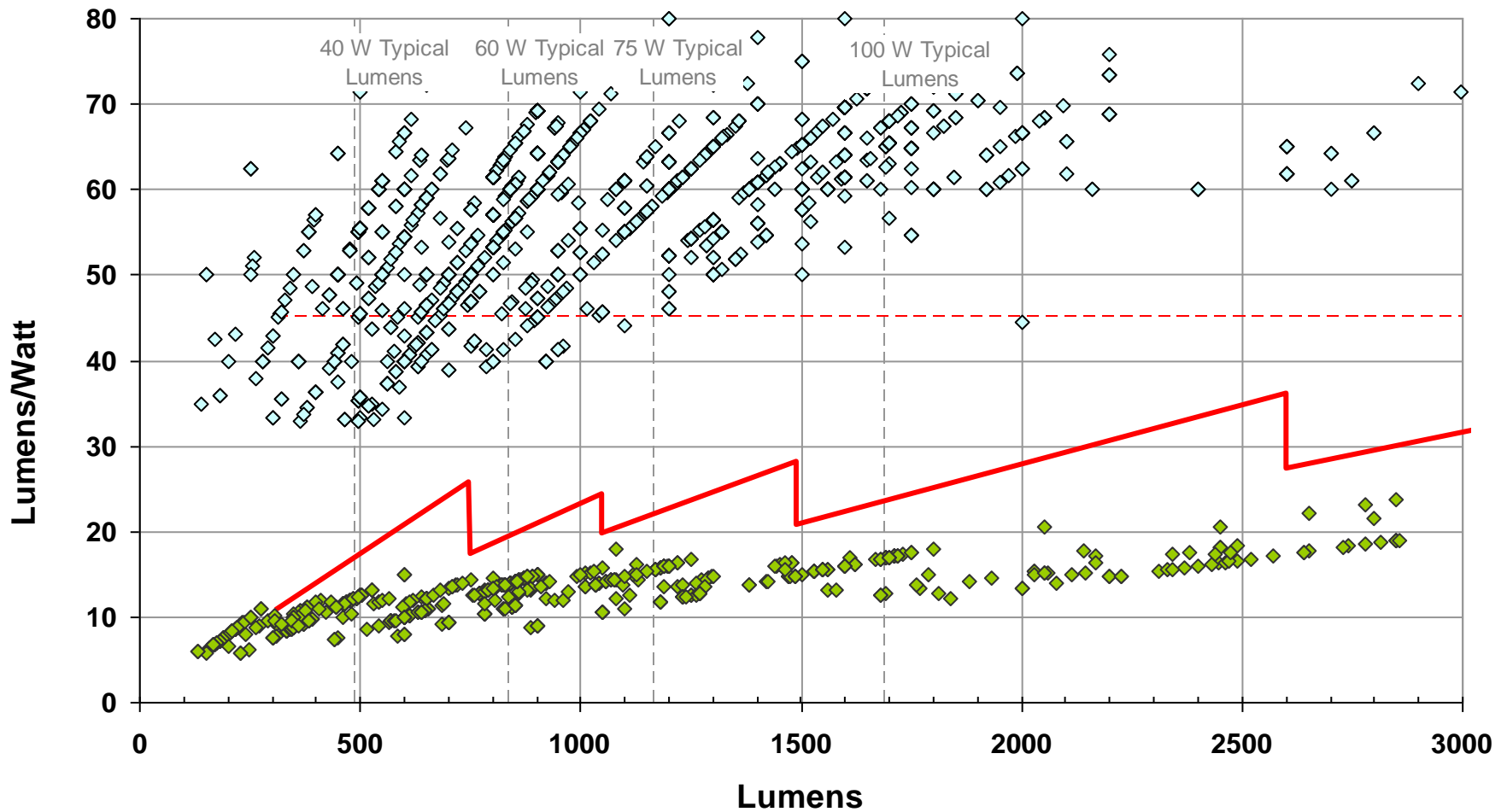
General Service Incandescent Lamp Standards

EISA Effective Dates	Trad. Incand. Replaced	Trad. Incand. Lumens	Trad. Incand. Efficacy	EISA Replacement	EISA Lumen Ranges	EISA Min Efficacy Ranges
1/1/2012	100 W	1690	17 lm/W	72 W	1490 - 2600	21 – 36 lm/W
1/1/2013	75 W	1170	16 lm/W	53 W	1050 - 1489	20 – 28 lm/W
1/1/2014	60 W	840	14 lm/W	43 W	750 - 1049	17 – 24 lm/W
1/1/2014	40 W	490	12 lm/W	29 W	310 - 749	11 – 26 lm/W



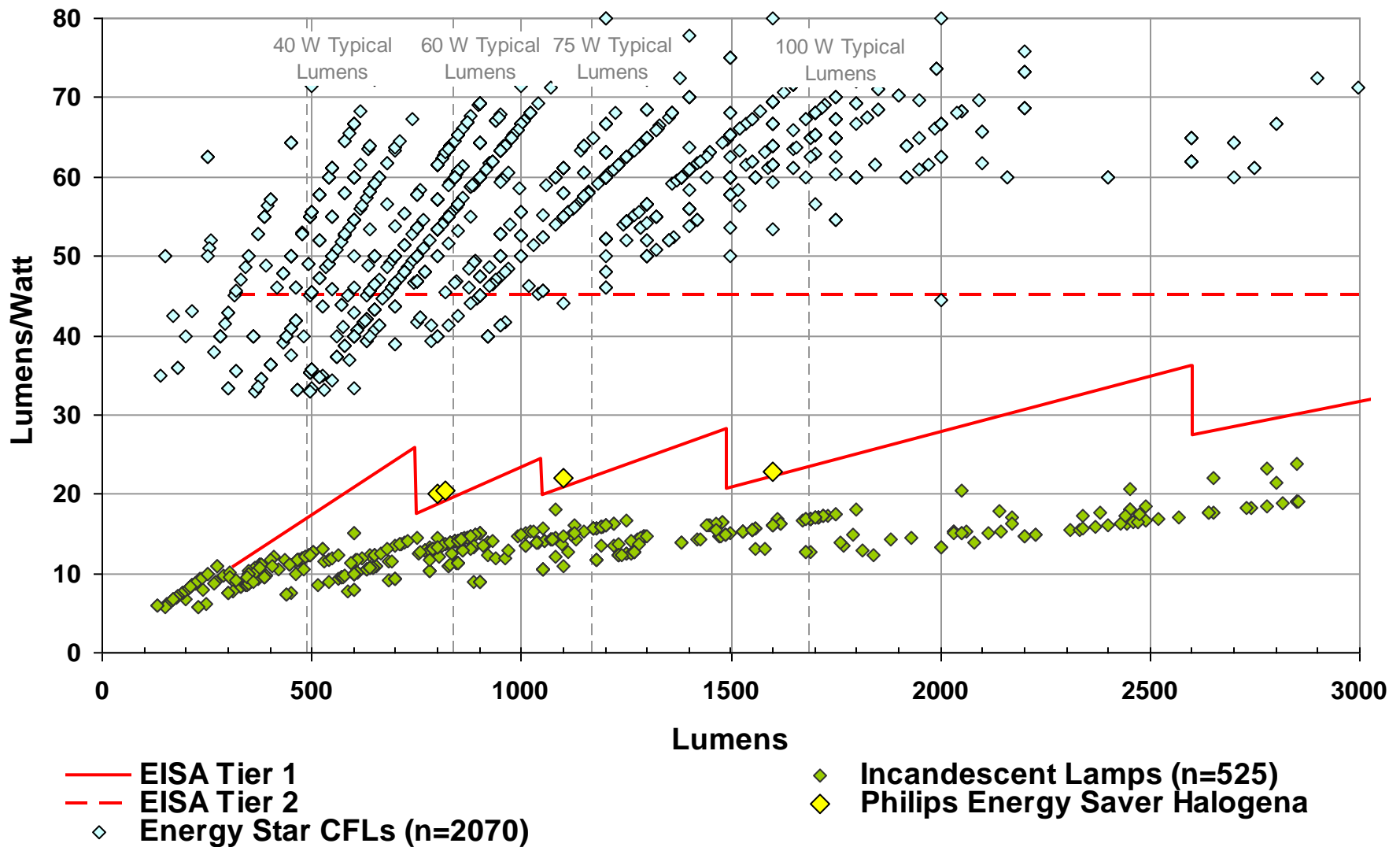
◆ Incandescent Lamps (n=525)

◇ Energy Star CFLs (n=2070)

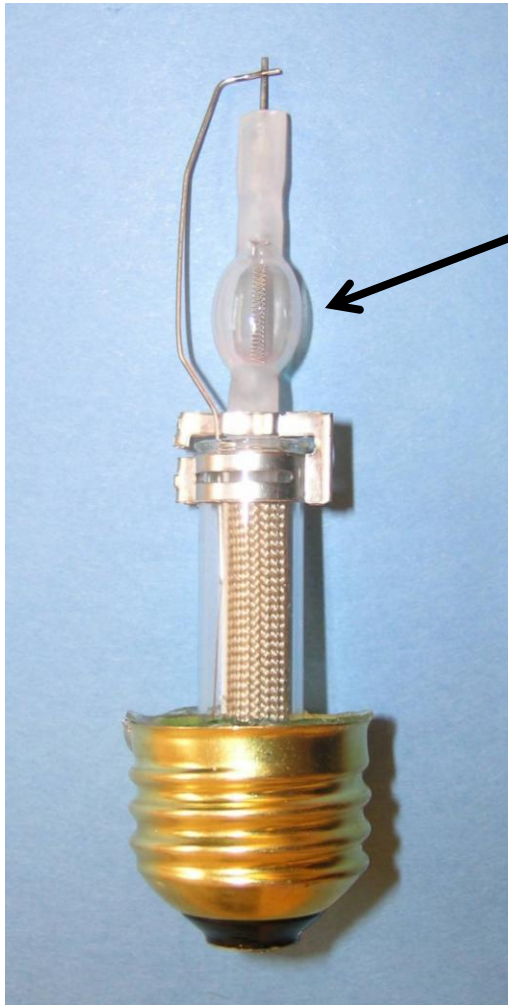


— EISA Tier 1
 - - - EISA Tier 2

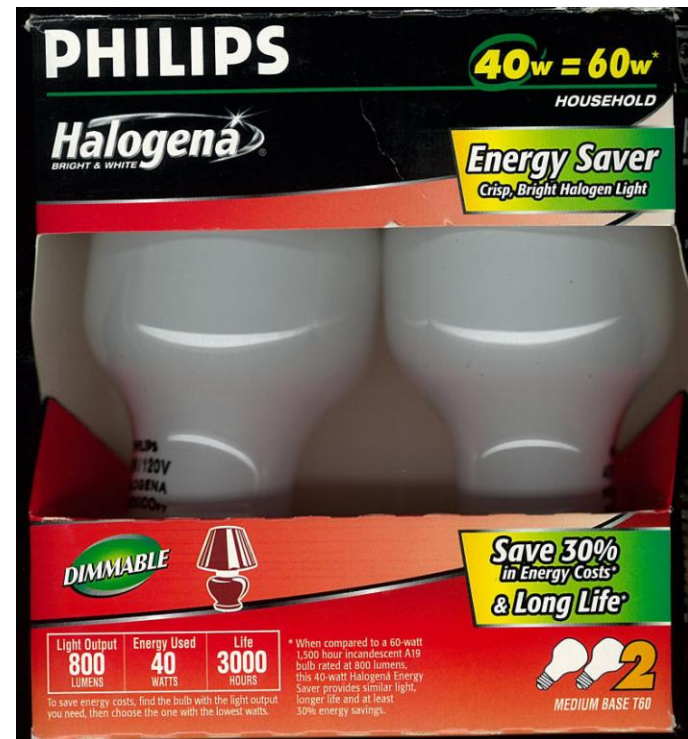
◆ Incandescent Lamps (n=525)
 ◆ Energy Star CFLs (n=2070)



Cutaway of Philips Energy Saver Halogena



Halogen Capsule with Infrared Reflective Coating
Approx. 20 lm/W

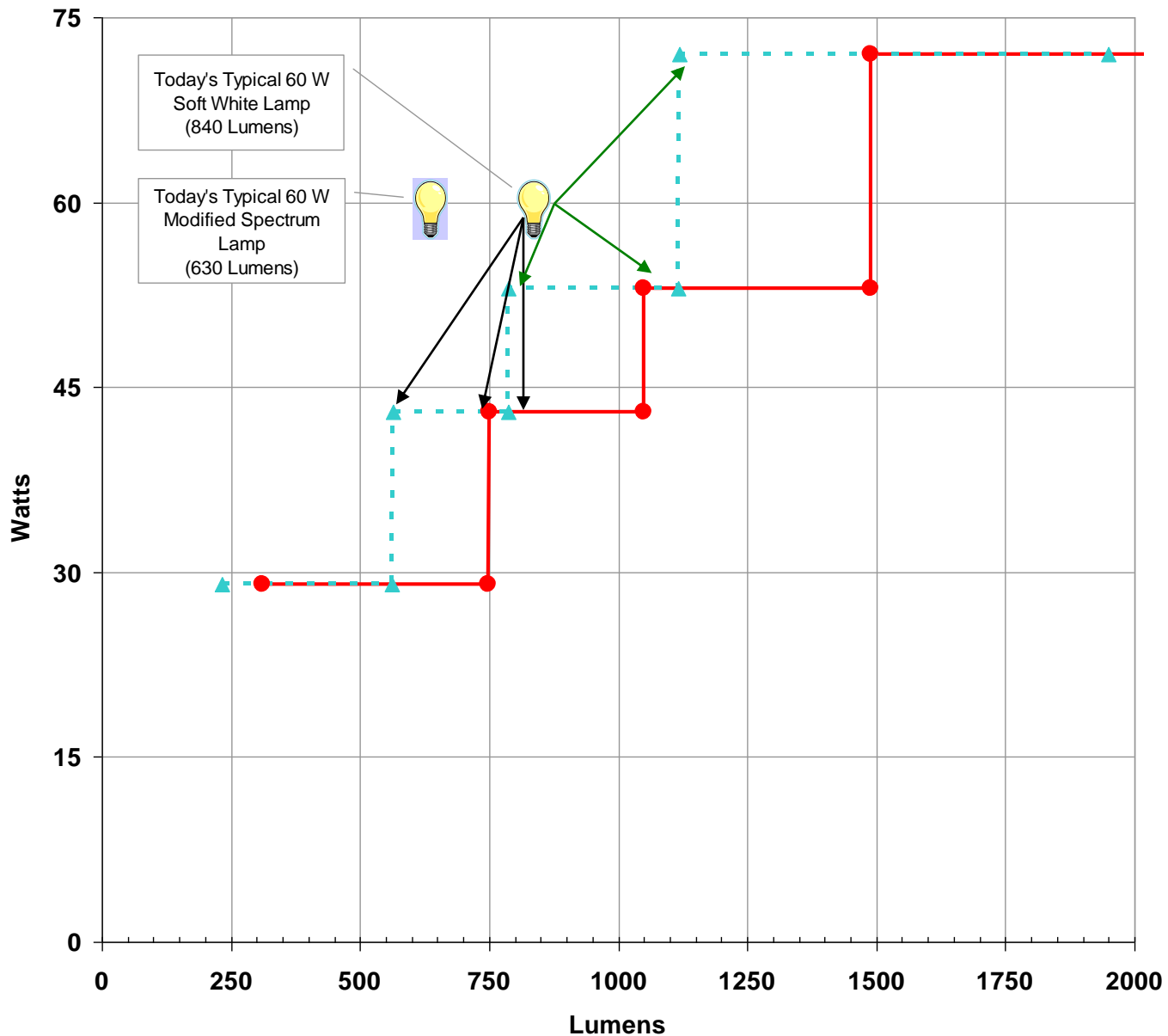


How Will We Comply with the New Standards?

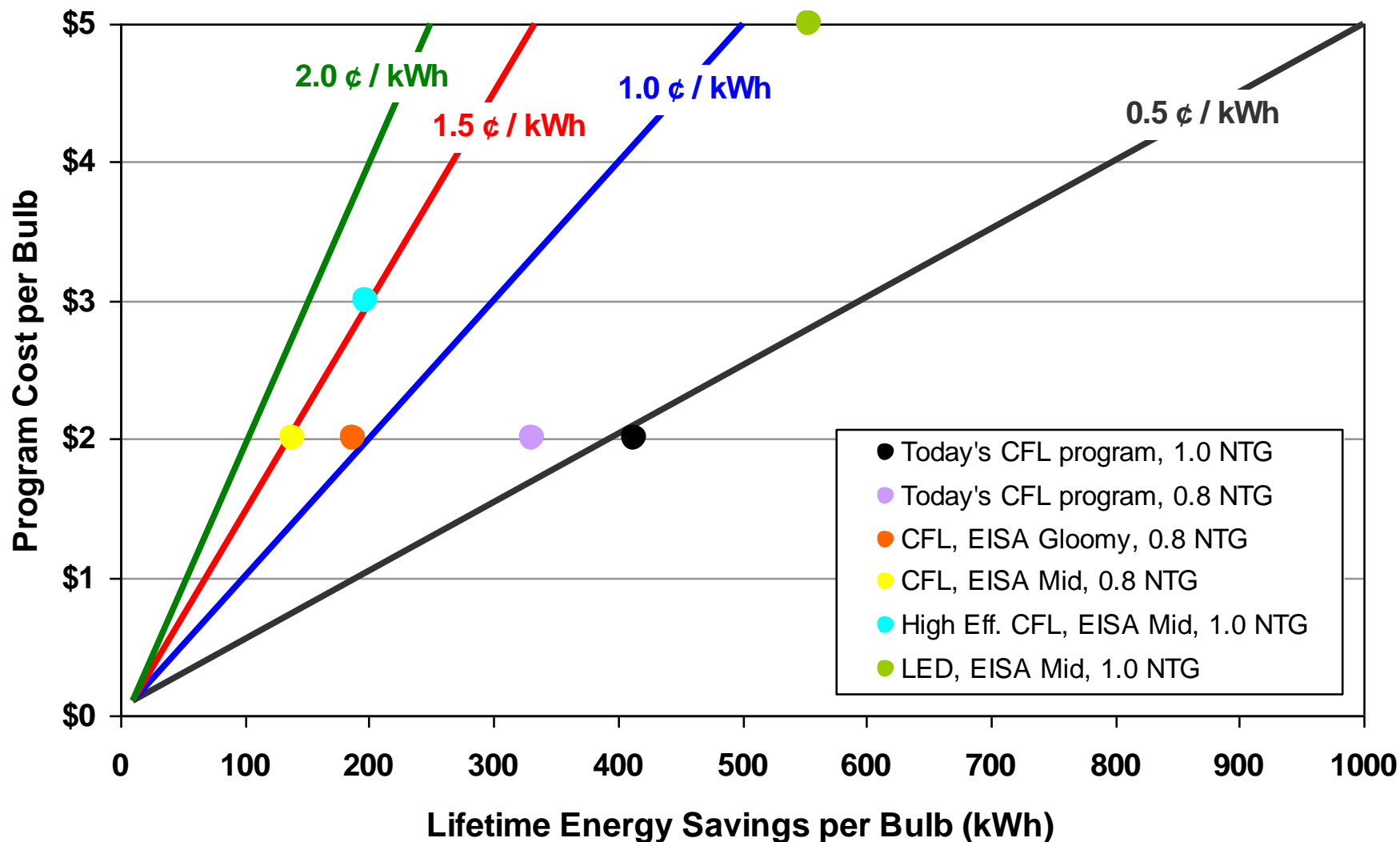
- ▶ **Rosy Scenario:** At its best, EISA will lead to the introduction of new bulbs with different and lower wattages than today's. Some consumers will shift to lower incandescent wattages; most will buy CFLs instead.
- ▶ **Gloomy Scenario:** At its worst, EISA will tempt one or more manufacturers to shift their current incandescent business wholly or mostly to modified spectrum lamps that are dimmer, less efficient, and cheaper than the efficient products their competitors are offering.
- ▶ **Mid Scenario:** Most likely. CFL sales rise, LEDs enter market, modified spectrums gain market share, consumers shift to EISA wattages below or above the lamps they are trying to replace.

Possible Scenarios for EISA	New Baseline	Typical Power of 60 W Replacement
Rosy	Mostly CFLs	14 W
Mid	Efficient Halogens	43 W
Gloomy	Bin Jumping	53 W (or even 72 W)

Wattage Plateaus vs. Purchase Decisions



Modeled Program Cost / Lifetime kWh Saved



Efficiency Program Costs per Lifetime kWh Saved

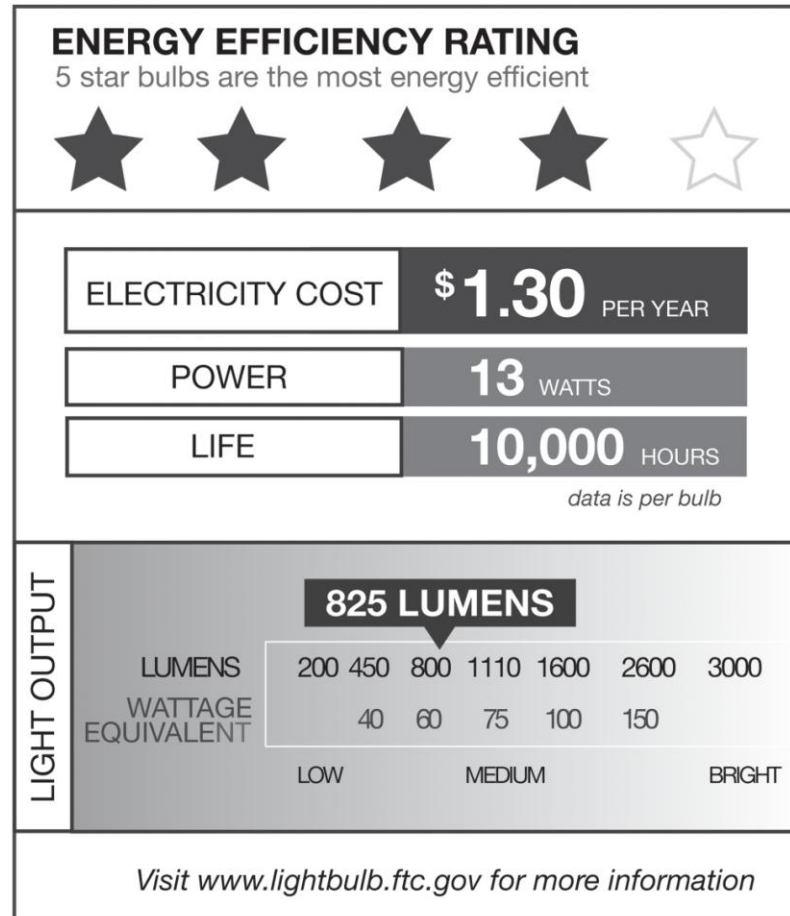
► CFL or other residential lighting efficiency programs after EISA may cost more than they do today, but are still likely to cost much less than other utility-run efficiency programs and supply side generation.

Program Type	Approximate Costs
Today's CFL Programs	0.5 ¢ / lifetime kWh saved
Future CFL or LED Programs (estimated)	Up to 2.0 ¢ / lifetime kWh saved
National Average for All Residential Efficiency Programs	3.0 ¢ / lifetime kWh saved
Supply Side Generation (before any potential CO ₂ fees)	5.0 – 7.0 ¢ / lifetime kWh generated

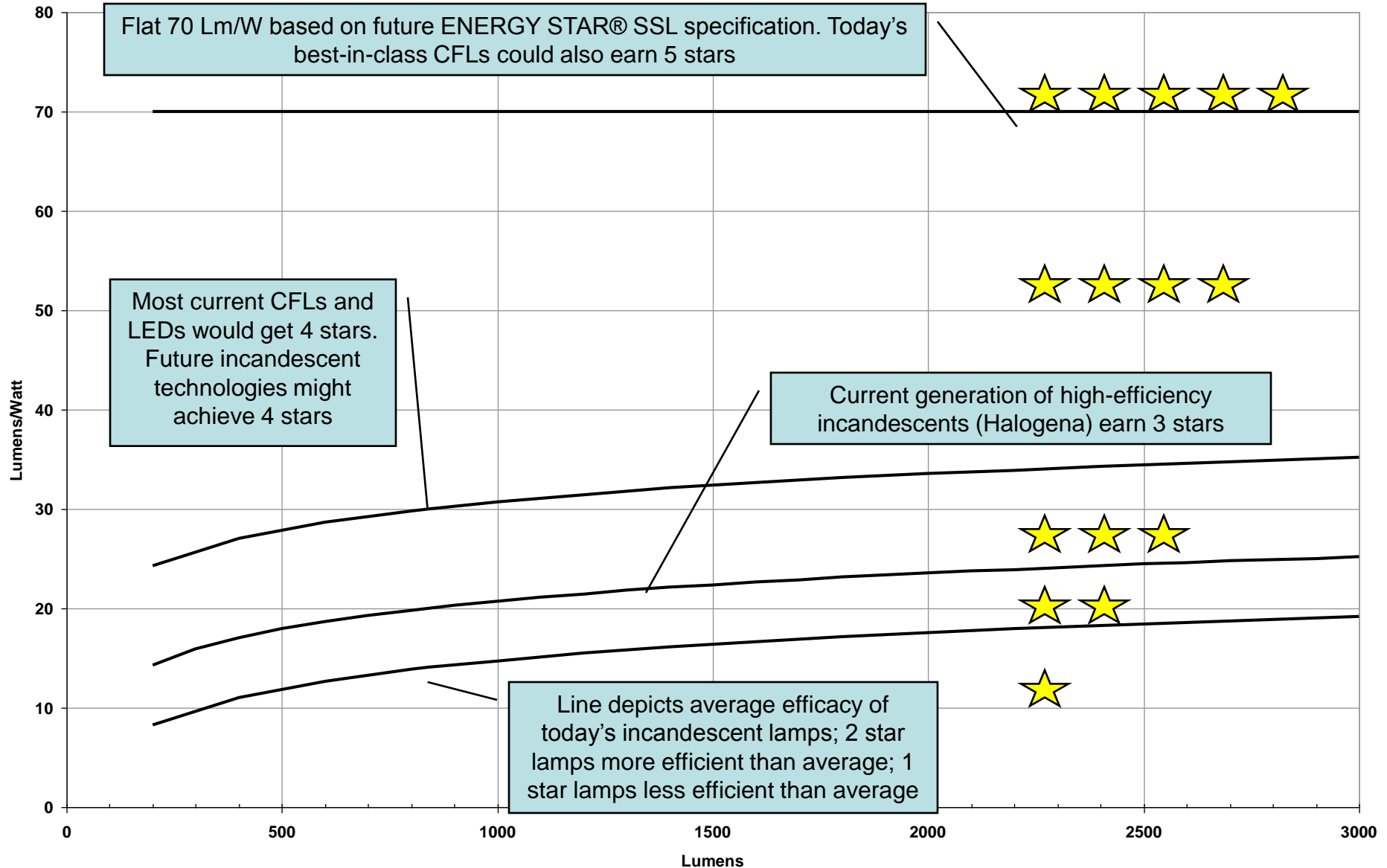
Alternatives to Today's CFL Programs

- ▶ Fixtures (i.e. ENERGY STAR CFL & LED fixtures)
 - ▷ 1,000s of ENERGY STAR CFL Fixtures, many exceed 50 lm/W
 - ▷ Both DOE and EPA are promoting LED fixtures
 - ▷ LED fixtures and CFL fixtures will continue to increase in efficiency for the foreseeable future
 - ▷ Fixtures have long measure lifetimes, are thermally & optically optimized, and cost-effective over time since ballast purchased only once--only lamps replaced.
- ▶ High-Efficiency CFLs and CFL fixtures (>70 lm/W)
- ▶ LED Replacement Lamps (not subject to free-ridership)
 - ▷ ENERGY STAR spec in development for screw-base LED lamps
 - ▷ 45 - 55 lm/W, 25,000 hours, dimmable, CRI>80
- ▶ Halogen IR incandescents. Not subject to free-ridership if promoted before standards take effect—can start getting savings now.
- ▶ High-efficiency halogen IR. Not on market yet, but coming. We have tested a 60 W capsule with an efficacy of 40 lm/W.
- ▶ Proposed FTC lamp label provides efficiency categories

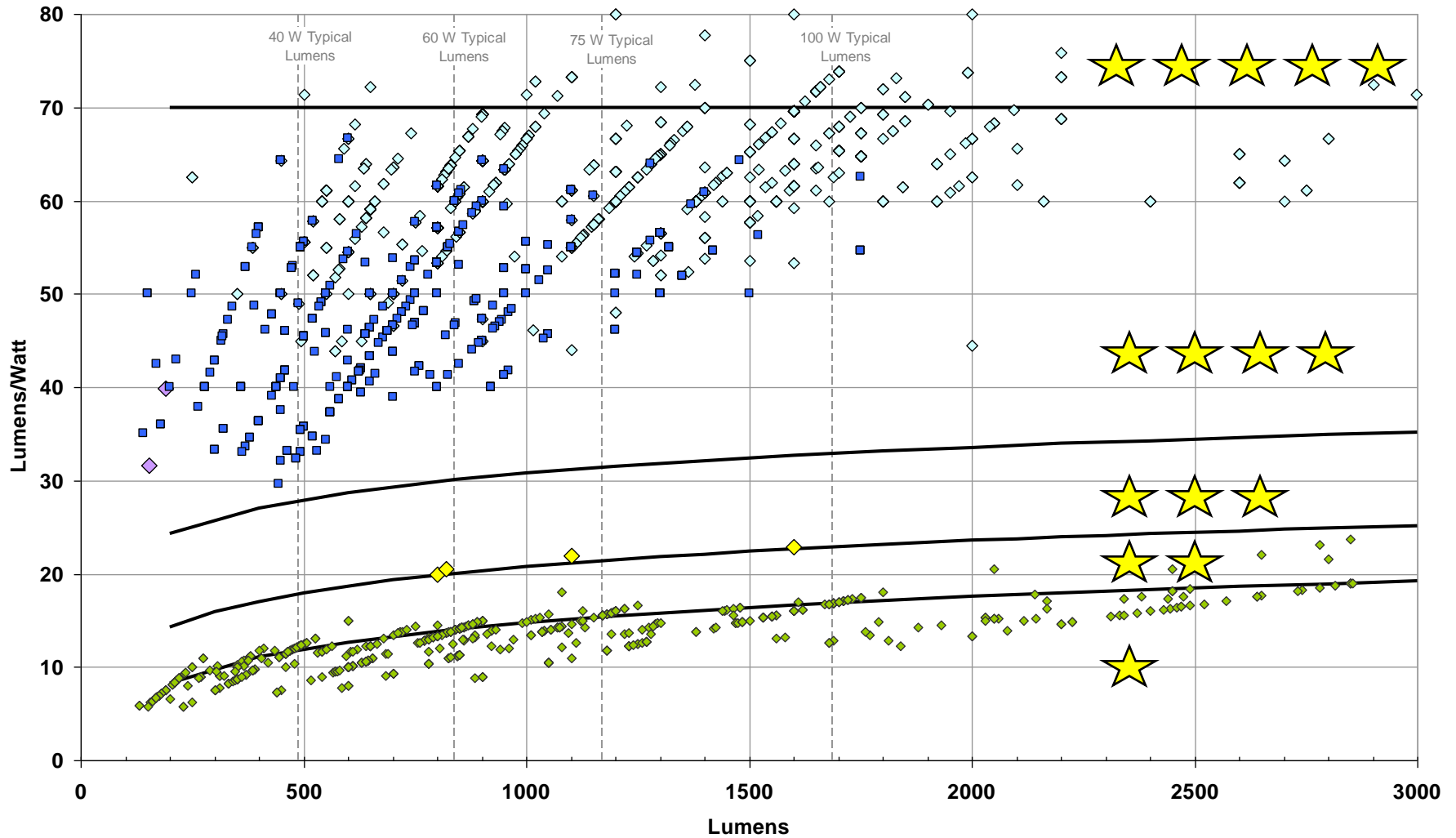
NRDC Lamp Label Prototype



Efficacy Boundaries



Efficacy Boundaries



◆ Typical Incandescent Lamps (n=525)

◆ Philips Energy Saver Halogena

◆ LED

◆ EStar Bare CFLs (n=1347)

■ EStar Covered CFLs (n=567)

Conclusion

- ▶ Do not despair!
- ▶ Many residential lighting program options available
- ▶ Rebate LED screw-base lamps—Likely to require higher rebates but they last longer than CFLs
- ▶ Offer high-efficiency CFLs to make up savings gap from new baseline
- ▶ Don't forget about opportunities with efficient incandescents
 - ▶ Efficient incandescents will be appealing to customers who don't buy CFLs
 - ▶ Super efficient incandescents likely to be available in the coming years
- ▶ Promote ENERGY STAR fixtures (low or no free-ridership)
- ▶ Utilize good/better/best marketing

Thank You

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